the feeder cables. Regardless of when this activity actually takes place, its classification is a recurring cost activity.

In the practice of fulfilling service requests, the ILEC may identify a need to re-arrange the existing network to meet service demand. Often the work activity will involve movement of SAI field cross-connects to different facilities. This is done because there may be a new service requirement where service was not established before. In some instances, the ILEC may even re-arrange entire sections of cables to meet new demand requirements. This re-arrangement splicing activity would be reflected in maintenance expenses of recurring rates. Likewise, the re-arrangement of a single SAI field cross-connect to meet demand is the same type of activity, and should be treated as a recurring cost activity.

The most important point regarding proposed Field Installation NRC's is that the product of the Field Installation activity must only benefit the CLEC request. *If the Field Installation activity provides future benefit to the CLEC, then that activity should be considered a recurring cost activity and the costs recovered through the recurring rates.*[7]

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[7] The FCC has found that recovering a recurring cost as a non-recurring cost to be unjust. We find that recovering a recurring cost through a non-recurring charge would be unjust and unreasonable because it is unlikely that incumbent LECs will be able to calculate properly the present value of recurring costs....

> Accordingly, we find that imposing non-recurring charges for recurring costs could pose a barrier to entry because these charges may be excessive, reflecting costs that may (1) not actually occur; (2) be incurred later than predicted; (3) not be incurred for as long as predicted; (4) be incurred at a level that is lower than predicted; (5) be incurred less frequently than predicted; and (6) be discounted to the present using a cost of capital that is

Q. SHOULD THE LINE CONDITIONING NRCs ASSOCIATED WITH ADVANCED SERVICES BE INCLUDED IN THE NRCM?

A. Line conditioning refers to activities that may be needed to make a copper loop DSL compatible. A properly reconstructed forward-looking network, as suggested by the TELRIC pricing guidelines,[8] would include this requirement. Therefore, the forward-looking design of the recurring network, if engineered using the most efficient technology for reasonably foreseeable capacity requirements, would not include load coils and would have minimal bridge taps. The non-recurring costs in this case should reflect forward-looking economic costs.[9] A forward-looking network construct would not require removal or conditioning of facilities, and therefore line conditioning should not be included in a UNE NRC model.

Moreover, not only is line conditioning not forward-looking, it is not properly a non-recurring cost at all. In all cases facilities, once conditioned, become available to all users of that network, including the ILEC and, therefore, the

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too low.

See Implementation of the Local Competition Provisions of the Telecommunications Act of 1996, First Report and Order, CC Docket 96-98, 11 FCC Rcd 15499, at ¶ 746-7 (1996) ("*Local Competition Order*").

[8] *See* First Report and Order at ¶ 685:

... We, therefore, conclude that the forward-looking pricing methodology for interconnection and unbundled network elements should be based on costs that assume that wire centers will be placed at the incumbent LEC's current wire center locations, but that the reconstructed local network will employ the most efficient technology for reasonably foreseeable capacity requirements.

[9] *See, e.g., In the Matter of Application of Ameritech Michigan Pursuant to Section 271 of the Communications Act of 1934, as amended, to Provide In-Region, InterLATA Services in Michigan*, CC Docket No. 97-137, Memorandum Opinion and Order No. FCC 97-298 (Aug. 19, 1997), ¶ 296.

cost of conditioning is a recurring cost. All in all line conditioning activities are network maintenance activities necessary to support the elements that require them.

As stated previously the local loop network element includes all features, functions, and capabilities of such transmission facilities. Those features, functions, and capabilities include the ability to deliver DSL services. Line conditioning additional facilities is merely a maintenance activity necessary to meet service demands. As such, the conditioning cost activities should be reflected in the maintenance expense included in recurring costs.

SECTION III: The AT&T / WorldCom Non-Recurring Cost Model (NRCM)

Q. DOES THE AT&T/WORLDCOM NON-RECURRING COST MODEL INCORPORATE THE ASSUMPTIONS THAT YOU DISCUSS ABOVE?

A. The AT&T/WorldCom NRCM incorporates all the assumptions identified and explained in Section II of my testimony. The model properly reflects: (1) a network engineered using forward-looking technologies and efficient processes; (2) an electronic ordering interface between CLEC and ILEC that incorporates front-end edits to minimize service order errors and the ability for those errors to be returned electronically; (3) an efficient OSS environment with unpolluted databases to minimize fallout; (4) electronic provisioning where possible; and (5) proper identification of recurring and non-recurring costs such as the recovery of OSS investment costs in recurring rates.

Q. PLEASE EXPLAIN HOW THE NRCM MODEL WORKS.

A. The NRCM develops cost estimates for the different non-recurring functions by identifying and estimating the associated costs of each activity that will be performed by an ILEC when a CLEC requests a wholesale service, interconnection, and/or an unbundled network element. By identifying and estimating costs associated with each activity, the NRCM develops a "bottoms-up" estimate of non-recurring costs. The methodology is very simple. First, all activities required to complete a Local Service Request ("LSR") are identified and listed. Second, for each activity, an estimate is provided of the amount of time (in minutes) required to perform each activity. As explained earlier, most non-recurring activities are accomplished electronically for which no time is captured. Third, once the time has

been determined, the wage rate associated with the type of labor required for the specific activity is determined and the labor cost is calculated. The model is constructed to take into consideration the probability of an activity occurring. Not all activities identified occur in all instances. For example, some activities required for unbundled copper loops are not required for unbundled fiber loops.

Fourth, the NRC Model calculates the cost of each of the activities comprising a NRC Element Type using the following formula:

$$\text{Activity Cost} = \frac{\text{Activity Probability X Time (minutes) X Rate (\$/hour)}}{60}$$

Finally, the model adds up the costs of the activities for each element type and then applies a variable overhead factor to calculate the total costs. This input represents the loading variable overhead expenses not already captured in the model. As mentioned earlier, the model inputs are user-adjustable to reflect a specific state's characteristics and/or values specified by state regulatory commission. The overhead factor for Virginia is eight percent 8%; the same factor was calculated and used in the recurring cost model.

Q. USING THE MODEL, HOW ARE THE TIME INCREMENTS REQUIRED FOR EACH ACTIVITY AND THE PROBABILITIES OF A PARTICULAR ACTIVITY DETERMINED?

A. The work times and probabilities for each particular activity were determined by the consensus of a panel of experts within the telecom industry as explained in the

NTAB (the Non-recurring Cost Model Technical Assumptions Binder) documentation submitted on July 2, 2001.

Q. WHAT TYPES OF SERVICE REQUESTS DOES THE NRCM STUDY?

A. The model currently calculates pre-ordering, ordering, provisioning and disconnecting non-recurring costs for 49 Network Element types. The order types represented are: New installation, Disconnect, and Migration. Some UNE examples are: UNE-Loop for POTS/ISDN BRI service; 4 Wire UNE Loop; and DS1 and DS3 Interoffice Transport. Section 28 of the NTAB provides a complete list and detailed description of each element type.

Q. PLEASE EXPLAIN THE TERMS "MIGRATION", "INSTALLATION", AND "DISCONNECT".

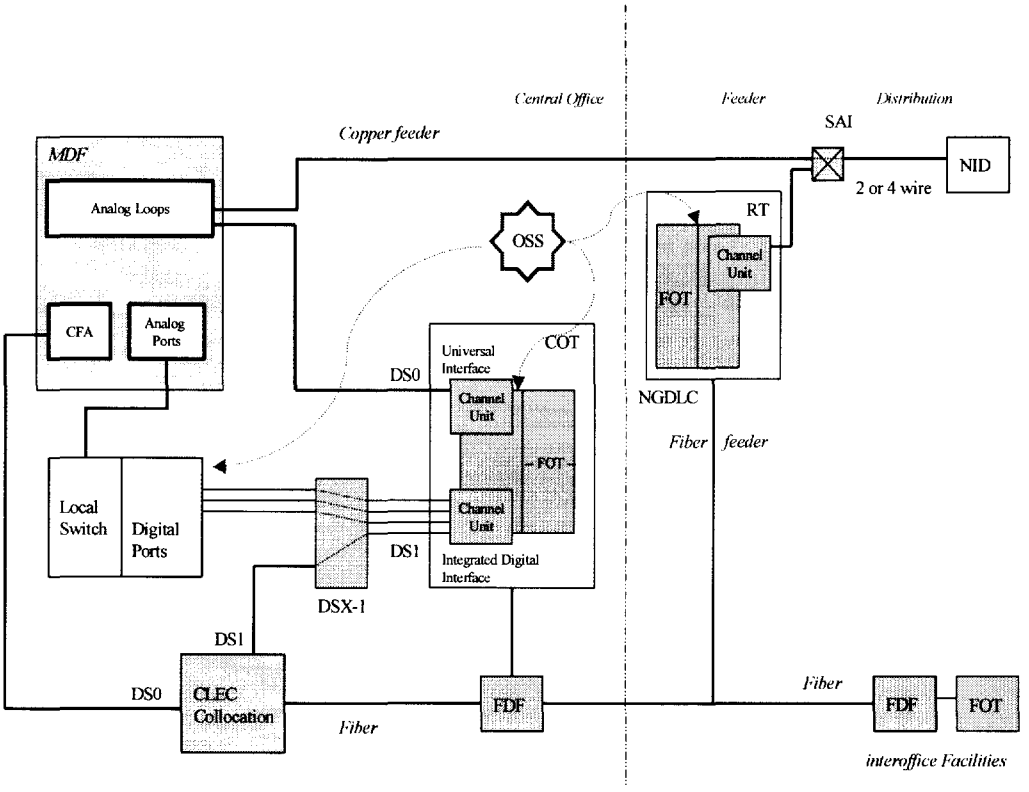
A. "Migration" occurs when the CLEC requests the existing services and/or facilities for a customer of the ILEC to be moved to the CLEC. "Installation" occurs when the incumbent establishes any new or additional service for a CLEC customer. "Disconnect," occurs when the CLEC requests that the ILEC no longer provide a service or unbundled network element.

Q. PLEASE DESCRIBE THE NETWORK TECHNOLOGY ASSUMED IN THE AT&T/WORLDCOM NRCM?

A. The NRCM assumes forward-looking efficient network architecture, as required by the forward-looking economic cost methodology. This approach assumes a network supports all of the services that the incumbent local exchange carrier provides, if it were to completely reconstruct its network in order to provide all of

those services at least cost. Within that architecture, the incumbent would install various network components, which would reflect the technology able to provide services at least cost.

NRCM Conceptual Network



The NRCM is designed to produce costs associated with both analog and digital loops melded together. The cost produced reflects the mix of the network in its entirety. The model calculates NRC's based on the economic mix of copper and fiber feeder.

For interconnection to the switch, the model also considers both analog and digital ports. To interconnect to the analog port, a manual cross-wire must to be placed at the MDF. Like the digital loop, the digital port can be interconnected electronically to the CLEC's DS1.

The model also considers forward-looking network elements such as Fiber SONET rings, Digital cross-connects such as the DCS/EDSX , ADTS (Automatic Digital Terminal System), Local Digital Switches (LDS), Low Profile Frames, DSX (for channelized loops), and Gateways that allow the CLEC to connect with the ILEC's OSS.

Q. CAN YOU FURTHER EXPLAIN THE DIFFERENCE BETWEEN ANALOG AND DIGITAL LOOPS?

A. An analog loop will have a physical appearance on the MDF, whereas the digital loop will not. The analog loop will require a manual cross connect to be placed to interconnect it to the CLEC as an unbundled loop.

The digital loop will enter the central office on electronics as a DS0 channel riding within a DS1. To interconnect it to the CLEC's network, an electronic cross-connect is made by the ILEC's OSS. It has no appearance on the MDF. Therefore ,the NRCs involved with provisioning a digital UNE-Loop are distinctly different from those of an analog loop.

Q. DOES THE MODEL INCORPORATE ANY FALLOUT IN THE NRC COST ESTIMATES?

A. Yes. The model incorporates fallout at the rate of two percent (2%). For each element, the NRCM assumes an efficient level of fallout that would be directly attributable to the CLEC. The time and costs associated with the manual activities necessary to resolve this fallout are included in the cost of completing the related local service request.

Q. WHAT IS THE BASIS FOR THE TWO PERCENT (2%) FALLOUT RATE?

A. As explained earlier in my testimony, most fallout resolution by the ILECs results in corrections to their own systems and databases and these corrections are properly characterized as recurring Maintenance Expenses not as non-recurring costs. It was the consensus of the experts involved in development of the NRCM that existing OSS, when operated and maintained efficiently, would experience CLEC caused fallout rates of two percent (2%).

The NRCM does not consider any fallout in the service-ordering phase of CLEC request processing. The authors believe the forward-looking OSS will identify incorrectly formatted requests, and return them electronically back to the CLEC to be fixed. In past cost dockets, we have asked ILECs (including Verizon) to produce examples of orders that they would have to manually process in the service-ordering phase. In reply they have responded with conditions that reflected thresholds set by them as a reason for the manual resolution. For example Verizon responded that service request with more than nine loops on a single request would

require an investigation by them to see if enough facilities existed. This threshold has nothing to do with the OSS processing the request. The manual processing by Verizon workforce is to insure they can fulfill the request or to notify with advance warning downstream departments that such a request is coming. It is AT&T/WorldCom's position that in real world telephony, field checks to ensure that facilities exist to meet the demand will occur. However, the cost to provide that demand is a recurring cost as apposed to a non-recurring cost. The ongoing engineering of the network to meet its demand is an operational cost associated with the elements that the network produces. Here again, as I have previously explained, the fallout is not caused by the CLEC, and any resolution should not be considered a non-recurring cost.

Q. WHAT NETWORK ARCHECTURES ARE ASSUMED IN THE MODEL FOR PURPOSES OF DETERMINING THE APPROPRIATE NRC COSTS?

A. As I discussed earlier, forward-looking technologies should be used. Specifically, the NRCM is based on the use of Local Digital Switches (LDS), GR-303 Integrated Digital Loop Carrier (IDLC) for loops served by a fiber feeder, Digital Cross-Connect Systems (DCS), and Synchronous Optical Network ("SONET") rings for transport. These technologies use intelligent processor controlled network elements that can communicate over standard interfaces to the OSS in such a manner that little or no human intervention is required for provisioning and maintenance activities. The main distributing frame ("MDF") is a low profile, punch down block for terminating copper loops in the central office.

The model assumes the ILEC will proactively maintain its network by performing basic network maintenance to ensure that it provides only high quality products and services to the CLEC. In addition, some NRC scenarios incorporate costs for pre-service testing such as a 1000 Hz. test for a 4-wire circuit to ensure that the service is performing optimally before it is released to the CLEC. Additional technical assumptions may be found in the NTAB as each element is described in detail.

Q. CAN YOU SUMMARIZE THE UNDERLYING PRICINCPLES OF A PROPERLY DEVELOPED NRCM?

A. In order for a competitive environment to exist, new entrants must have non-discriminatory access to the incumbent's databases and other resources for entering service orders to eliminate the need for costly, intermediate customer service contacts. Also, new entrants must only incur costs equal to those which the ILEC would incur using a forward looking network architecture and efficient OSS, or the CLEC will be burdened with a barrier to market entry and the ILEC will have no incentive to operate efficiently. Finally, NRCs must be based upon forward-looking economic cost principles and each task that the ILEC claims as a NRC must benefit only the CLEC's request.

Q. DOES THE NRCM PROPOSED BY AT&T AND WORLDCOM INCORPORATE THOSE PRINCIPLES?

A. Yes. The NRCM reflects those requirements, as follows:

1. The prices produced by the NRCM represent the entire process necessary to activate, change or disconnect a request to interconnect with the ILEC. Its

focus is on the efficient *individual steps* necessary to fulfill the request and is not focused on departmental functionality.

2. The NRCM is consistent with forward-looking economic cost principles. Only true non-recurring cost activities are accounted for in the NRCM.
3. The prices produced by the NRCM are consistent with the same network model assumed for determining recurring rates.
4. The NRCM incorporates the efficiencies of automated OSS that provide for maximum electronic flow through of orders. To the extent fallout occurs, it is limited to approximately two percent (2%) of the total orders processed.
5. Manual work times reflect appropriate intervals based on the use of forward-looking network technologies.
6. The NRCM incorporates the efficiencies of automated Intelligent Network Elements (SONET, GR-303/IDLC, DCS/EDSX, LDS, etc.) that provide for maximum electronic flow through for provisioning of orders.
7. Installation and disconnection costs are calculated separately.

SECTION IV: Recommendations Regarding NRCs

Q. BASED ON YOUR EXTENSIVE EXPERIENCE WITH NON-RECURRING ACTIVITIES, COSTS AND CHARGES, WHAT DO YOU RECOMMEND THAT THE COMMISSION SHOULD DO TO SET NEW NON-RECURRING CHARGES FOR THE PROVISIONING OF UNEs IN VIRGINIA?

A. I recommend that the FCC adopt the AT&T/WorldCom Non-Recurring Cost Model. It properly translates the forward-looking economic cost methodology into reasonable, forward-looking non-recurring charges for UNE, and interconnection orders.

I also recommend a proposed rate design that would incorporate the forward-looking assumptions and principles I have mentioned thus far. Specifically, the rate design should incorporate an end-to-end process where by the NRC rate for a particular UNE reflects the entire process necessary to order and provision the UNE. Secondly the rate design should reflect the type of order, and should not include disconnect cost. Disconnect NRCs should be modeled differently and reflected separately.

For that reason I recommend that the Commission adopt the specific NRCs that are developed by the NRCM submitted by AT&T/WorldCom on July 2, 2001.

Q. WAS A MODEL RUN WITH A LIST OF NRCS FILED ON JULY 2?

A. Yes a series of spreadsheets produced by the NRCM were submitted. On the Summary Page (page 1) is the total non-recurring cost for the 49 elements produced by the NRCM. I recommend that the Commission adopt these non-recurring charges, because they comport with forward-looking economic costing and reflect the important assumptions, inputs, and methodology that I have discussed above.

Page 2 of that exhibit is the adjustments to input variables used by the model. It is on this page you can see that the model was set to calculate the NRCs based on thirty-nine percent (39%) fiber feeder network (Copper Loop Percentage: sixty-one percent (61%)) and that the Variable Overhead was adjusted to eight percent (8%).

Accompanying those 2 pages is the batch output produced by the NRCM showing process flows for elements referenced on the Summary page. Within these series of pages one can examine the efficient steps that are necessary to activate a request for a UNE by the CLEC. These "batch output" sheets provide a more detailed explanation of the individual NRCs shown on the first, summary page.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. This concludes my testimony

I, Richard J. Walsh hereby swear and affirm that the foregoing direct testimony was prepared by me or under my direct supervision or control and is true and accurate to the best of my knowledge and belief.

Signed:

Witness

State : New Jersey
County : Middlesex

I, Yvonne R. Johnson do hereby swear and affirm that Richard J. Walsh appeared before me this 26th day of July, 2001.

Signed:

Notary

Notary Qualification Expires:

YVONNE R. JOHNSON
NOTARY PUBLIC OF NEW JERSEY
My Commission Expires May 24, 2005

[Stamp or Seal]

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of Petition of AT&T Communications of Virginia, Inc., Pursuant to Section 252(e)(5) of the Communications Act, for Preemption of the Jurisdiction of the Virginia State Corporation Commission Regarding Interconnection Disputes with Verizon-Virginia, Inc.	)	CC Docket No. 00-251
In the Matter of Petition of WorldCom, Inc. Pursuant To Section 252 (e)(5) of the Communications Act for Expedited Preemption of the Jurisdiction of the Virginia State Corporation Commission Regarding Interconnection Disputes With Verizon Virginia, Inc., and for Expedited Arbitration	)	CC Docket No. 00-218
In the Matter of) Petition of Cox Virginia Telecom, Inc. Pursuant to Section 252 (e)(5) of the Communications Act for Of the Jurisdiction of the Virginia State Corporation Commission Regarding Interconnection Disputes with Verizon Virginia, Inc. and for Arbitration	)	CC Docket No. 00-249

DIRECT TESTIMONY OF
CATHERINE E. PITTS
ON BEHALF OF AT&T AND WORLDCOM, INC.

JULY 31, 2001

I. INTRODUCTION AND QUALIFICATIONS.

Q. PLEASE STATE YOUR NAME AND ADDRESS.

A. My name is Catherine E. Pitts. I am a contractor working on behalf of AT&T[1] and WorldCom. My address is 810 Long Drive Road, Summerville, South Carolina.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND WORK EXPERIENCE.

A. I have an MBA from Rutgers University, New Jersey, and eighteen years of experience in the telecommunications industry. I was employed by Bellcore (now Telcordia Technologies) from 1983-96, where I was one of three individuals who designed, and implemented new incremental costing methodology into the SCIS/IN model. The SCIS/IN model is used to identify the costs associated with switching "features" (*e.g.,* call waiting, call forward, and caller ID) and belongs to the family of models used to determine the costs associated with switching in general. I was also Telcordia's lead subject matter expert on feature costing as well as a subject matter expert in engineering cost methodology issues on the following switch types: 1ESS, 1A ESS and 5ESS. When I was promoted to lead the SCIS group of approximately 20 people, I was responsible for the technical development, production, documentation, and customer care for the SCIS family of models. The SCIS/MO model analyzes the basic switch function costs and the SCIS/IN model develops the costs of vertical features and services. My experience also includes extensive consultation in the use of cost models in various cost studies in the United States and abroad.

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[1] This Affidavit is presented on behalf of WorldCom, Inc. and AT&T Communications of Virginia, Inc., TCG Virginia, Inc., ACC National Telecom Corp., MediaOne of Virginia and MediaOne Telecommunications of Virginia, Inc. (together, "AT&T").

Q. WHAT DID YOU DO AFTER YOU LEFT BELLCORE?

A. In 1996, I joined AT&T as a switch cost expert, primarily involved in analyzing incumbent telephone company switching cost studies. In May, 2001, I left AT&T to work as an independent contractor performing switch cost study analyses and testifying in switch-related cost proceedings.

Q. HAVE YOU TESTIFIED IN REGULATORY PROCEEDINGS ON SWITCH UNE RATES?

A. As an AT&T employee for five years, and subsequently as a contractor on behalf of AT&T, I have presented expert testimony regarding switching investments and costs in numerous unbundled network element ("UNE") and Universal Service Fund ("USF") cost proceedings, including proceedings before regulatory bodies in California, Nevada, Hawaii, Texas, Oklahoma, Kansas, Florida, Georgia, Alabama, Tennessee, North Carolina, Louisiana and South Carolina. Of particular interest in this proceeding, I have testified regarding Verizon's switch cost studies in New York, Rhode Island, New Hampshire and Maryland.

II. PURPOSE AND SUMMARY OF TESTIMONY.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to explain why the proposed switch UNE inputs and the switch module of the Modified[2] Synthesis Model used by AT&T/WorldCom witness Brian F. Pitkin to produce switch UNE rates in this case are appropriate and reasonable.

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[2] The Modified Synthesis Model proposed by Mr. Pitkin is based on the FCC's Synthesis Model with changes specified by Mr. Pitkin. Unless otherwise stated and except where noted, my comments apply to the switch module of the Modified Synthesis Model.

Q. PLEASE SUMMARIZE YOUR TESTIMONY.

A. My direct testimony addresses the following points:

- The switch module of the Modified Synthesis Model uses switch price inputs developed by the FCC that are reasonable.
- These same FCC switch price inputs, when applied to Verizon-Virginia's size and type of switches, reflect VZ-VA switch prices.
- The Modified Synthesis Model's switch module and its inputs are appropriate for use in a UNE proceeding.
- The cost driver for the majority of a switch's cost is ports, and the traffic sensitive investments are peak-period related.

III. THE SWITCH MODULE OF THE MODIFIED SYNTHESIS MODEL PROVIDES AN APPROPRIATE BASIS FOR MODELING VERIZON VIRGINIA'S SWITCHING UNE COSTS.

Q. THE SWITCH MODULE OF THE FCC'S MODIFIED SYNTHESIS MODEL WAS NOT DESIGNED TO CALCULATE UNE COSTS. WHAT MODIFICIATIONS WERE NECESSARY TO MAKE IT APPROPRIATE?

A. Two items needed to be examined to ensure that the switch module was being used appropriately for estimating UNE switch costs. First, the national switch price inputs were reviewed for applicability to state-specific UNE switch costs; and second, the relative proportion of cost in the traffic-sensitive and non-traffic-sensitive categories were analyzed for use in a UNE proceeding.

Q. EXPLAIN WHY THE REVIEW OF SWITCH PRICE INPUT DATA WAS REQUIRED.

A The FCC conducted an exhaustive review of switch prices for use in the switch module of the Synthesis Model developed for Universal Service Fund cost

estimations. It analyzed ILEC switch depreciation data as well as switch purchasing data from the Rural Utilities Service to reflect very small telephone company switch purchases. The FCC developed a regression on the data to determine the average price for a host (or standalone) switch and a remote switch and to make the mid-1990's data forward-looking.[3]

A careful review of the switch price inputs indicates that the FCC's development of switch price inputs conformed to forward-looking economic cost principles – the same costing principles applicable to UNE studies.

The FCC indicated that parties should be careful about using inputs that reflect nation-wide values rather than company-specific inputs. For switching, however, the FCC's caution is not a concern. The large incumbent telephone companies have similar purchasing power over the switch vendors, and the use of nation-wide prices is appropriate because the prices paid by the large incumbent telephone companies are comparable for the same type and size of switch. The switch portion of the Synthesis Model applies the FCC's end office switch price inputs to the specific switch types and switch sizes in Virginia, effectively reflecting the characteristics and costs of the Virginia switch network.

Q. HOW DO THE FCC SWITCH INPUTS COMPARE TO SWITCH PRICE INPUTS USED IN UNE PROCEEDINGS?

A. A comparative measure of switch prices is the switch price per line. The switch price per line is calculated by dividing the total switch price by total lines.

[3] The FCC switch price inputs are $486,700 fixed cost for a host/standalone switch, $161,800 for a remote switch, plus $87 per line. These costs include all capitalized investment associated with a digital switch, including engineering, installation, power and features.

Verizon filed workpapers in Massachusetts showing the material price for its Nortel switches averages $88 per line, not including engineering, installation or power.[4] The Modified Synthesis Model calculates $107.05 per line for switching in Virginia, *including* engineering, installation and power, making the two switch prices per line roughly comparable.

The FCC switch price inputs attempted to isolate the cost of only new switch purchases, while Verizon's switch prices filed in Massachusetts were based on the prices it pays to add equipment to existing switches, known as "growth" prices. Historically, the discounts the vendor gave for purchasing a new switch were higher than the discounts for add-on equipment or "growth" to an existing switch. Recently, however, Verizon has filed testimony in New York indicating that the discounts it now receives for growth equipment have deepened and are roughly the same as the discounts for new switch equipment. Verizon stated:

> The Company and its vendors know that Verizon will upgrade and grow its existing digital switches in the future, not replace them. The one tier discount structure actually provides for steeper discounts when growing a switch, than on the initial purchase of a switch.[5]

Verizon made a similar statement in Maryland and Massachusetts proceedings:

> And the current Nortel contract new or "replacement" discount is very close to its growth discounts.[6]

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4 Verizon-MA workpaper C-2, Section 4, Page 1 of 3 shows total DMS local switch investment of $171,220,775. Workpaper C-2, Section 4, Page 2 of 3 shows 1,936,526 DMS lines. Dividing investment by lines results in $88 per line.

5 Proceeding on Motion of the Commission to Examine New York Telephone Company's Rates for Unbundled Network Elements, Verizon Rebuttal Testimony, Case 98-C-1357, February 7, 2000 (rev. February 24, 2000), at 187.

6 Panel Testimony of Louis D. Minion and Marsha S. Prosini on behalf of Verizon Maryland, Case No. 8879, May 25,2001, at 78-79; Panel Testimony of Verizon Massachusetts on Costs and Rates for the Unbundled Network Elements and related Wholesale Services, May 4,2001, DTE-01-20, at 140.

Therefore, the comparison between the FCC's new switch prices and Verizon's growth switch prices is relevant because Verizon has acknowledged that today there is little price difference between new and growth switch prices. We can use information from other Verizon states and apply it to Virginia because Verizon negotiates switch prices for all of its territories, resulting in similar switch prices for all Verizon territories. The only expected variation between Massachusetts, New York, or Virginia would be due to switch size. The average size switch in Virginia is 18,278 lines compared to 16,903 lines per office in Massachusetts,[7] indicating that Virginia's switch prices should not be higher than those of Massachusetts.

In light of this evidence, I believe that the $88 material price per line confirms that the FCC switch price inputs are within a range of reasonableness for use in Virginia.

Q. WHAT MODIFICATION IS NECESSARY TO THE INPUTS USED IN THE SWITCH PORTION OF THE MODIFIED FCC SYNTHESIS MODEL TO ENABLE IDENTIFICATION OF TRADITIONAL PORT AND MINUTE OF USE UNBUNDLED NETWORK ELEMENTS?

A. For USF calculations, the relative proportions of traffic-sensitive and non- traffic-sensitive switch costs is typically not an issue.[8] In calculating UNE costs, however, these two cost categories have typically been identified separately to

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[7] Calculated from Synthesis Model outputs.

[8] Although the FCC, for USF purposes, had defined port and non-port types of switching investment, it was not relevant in the USF Synthesis Model because the results are displayed as a per line cost. The FCC had defined port-related switch costs as the main distributing frame and the line card (or equivalent) that are dedicated to the port. The port and non-port designations do not equate to traffic-sensitive and non-traffic-sensitive costs.

facilitate rate design for unbundled switching that tracks the manner in which costs are incurred. Mr. Kirchberger's testimony will address the switching UNE rate design issue on behalf of AT&T, and Mr. Goldfarb will do the same for WorldCom.

Q. HOW SHOULD SWITCHING COSTS BE CALCULATED TO PROPERLY REFLECT COST CAUSATION?

A. Switching UNE costs should reflect the general cost causation trends of switch engineering and purchasing. Switches are basically large computers, and the computing technologies associated with memory and processing power have allowed the switch manufacturers to provision the current digital switches with memory and processing power that far exceed expected demands. Given the computing power available in modern switches, the primary limiting factor in today's digital switches is not processing capacity but rather the exhaustion of the number of ports.

Q. DO YOU HAVE AN EXAMPLE OF HOW THE EXHAUSTION OF A SWITCH'S PORTS DEMONSTRATES COST CAUSATION?

A. Much of the total cost of a switch is associated with memory and processors and is incurred at the time a switch is placed in operation. These "getting started" costs do not vary with usage or features. If a switch does exhaust because the maximum port capacity is reached, then a wire center must incur the cost of a second switch. The exhaustion of the first switch's ports is the primary cause for incurring the "getting started" costs for the second switch, and accordingly, these costs should be assigned to the ports. The majority of the cost of today's generation of digital switches is driven by ports—not by usage or features.

Q. HOW CAN THESE "GETTING STARTED" COSTS BE DETERMINED AND HOW MUCH OF THE TOTAL SWITCH INVESTMENT SHOULD BE ASSIGNED TO THE PORT?

A. Based on publicly available information, I estimate that 30% to 50% of switching costs are usage sensitive. The remaining 50% to 70% of switching costs relate to dedicated ports and fixed costs and would be assigned to the port. The Modified Synthesis Model results for traditional port and minute of use rate element split sponsored by Mr. Pitkin use the midpoint of 60% as an input to assign costs to the port element. I expect that these percentages will be different once I have had the opportunity to review Verizon-Virginia specific data in lieu of nation-wide figures. Of course, this assignment of costs does not matter in Mr. Pitkin's determination of flat rated switch costs because there all of the costs, both traffic-sensitive and non-traffic-sensitive, are reflected in the per-line total.

Q. ARE THE REMAINING 40 PERCENT OF VERIZON'S SWITCHING COSTS USAGE-DRIVEN?

A. The 40% traffic-sensitive costs identified in the Modified Synthesis Model reflect the equipment engineered to satisfy peak period usage. Ms. Murray's testimony discusses the critical issue of peak period costs and appropriate rate design.

Q. IS THE ALLOCATION BETWEEN PORT AND TRAFFIC SENSITIVE MINUTES OF USE ELEMENTS THE ONLY INPUT THAT COULD BE ADJUSTED IN THE SWITCH MODULE OF THE MODIFIED SYNTHESIS MODEL TO ESTIMATE FORWARD-LOOKING SWITCH COSTS?

A. No. Additional input modifications could be made that would make the switch module more accurate and result in lower switch UNE costs; however, these input changes have created controversy in the past and have not been made here in order to minimize switch input disputes.[9]

[9] These changes include the following that were not adopted by the FCC in the Fifth Report and Order: [1] The maximum switch capacities for ports, CCS and calls should all be increased to

IV. CONCLUSION

Q. PLEASE SUMMARIZE AND STATE YOUR CONCLUSION.

A. The FCC's Synthesis Model switch module methodology comports with forward-looking economic costs that can be used for determining UNE switch rates. The FCC's switch price inputs and the Modified Synthesis Model's input adjustment to correctly assign investments to the port and usage switch elements are appropriate and reflect the forward-looking cost of switching for VZ-Virginia.

Q. DOES THAT CONCLUDE YOUR TESTIMONY?

A. Yes, it does.

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more accurately reflect current digital switch configurations; [2] The credit input to account for the savings associated with GR303 integrated digital loop carrier should be used to reflect the amount of GR303 assumed in the study.